What is claimed is:

1. An ink-jet recording sheet comprising a support having thereon a first porous ink receptive layer and a second porous ink receptive layer in that order, the first porous ink receptive layer and the second porous ink receptive layer each containing,

(i) inorganic microparticles; and

(ii) a hydrophilic binder which is cross-linked by irradiation with ionization radiation,

wherein an average particle diameter of second particles of the inorganic microparticles in the second porous ink receptive layer is smaller than an average particle diameter of second particles of the inorganic microparticles in the first porous ink receptive layer.

2. The ink-jet recording sheet of claim 1, wherein a polymerization degree of the hydrophilic binder is not smaller than 500 and a ratio of cross-linking conversion of the hydrophilic binder is not more than 4 mol% based on the total mol of the hydrophilic binder.

3. The ink-jet recording sheet of claim 1, wherein the first porous ink receptive layer and the second porous ink receptive layer are provided using a simultaneous multilayer coating method.

4. The ink-jet recording sheet of claim 1, wherein the inorganic microparticles contained in the second porous ink receptive layer are silica or alumina.

5. The ink-jet recording sheet of claim 1, wherein the first porous ink receptive layer and the second porous ink receptive layer each has a void volume per unit area of 15 - 40 ml/m^2.

6. The ink-jet recording sheet of claim 1, wherein the support is a non-absorptive support.

7. An ink-jet recording sheet comprising a support having thereon a first porous ink receptive layer and a second porous ink receptive layer in that order, the first porous ink receptive layer and the second porous ink receptive layer each containing,

(i) inorganic microparticles; and

(ii) a hydrophilic binder which is cross-linked by irradiation with ionization radiation,

wherein an average particle diameter of second particles of the inorganic microparticles in the second porous ink receptive layer is smaller than an average particle diameter of second particles of the inorganic microparticles in the first porous ink receptive layer; a polymerization degree of the hydrophilic binder is not smaller than 500 and a ratio of cross-linking conversion of the hydrophilic binder is not more than 4 mol% based on the total mol of the hydrophilic binder; and the first porous ink receptive layer and the second porous ink receptive layer are provided using a simultaneous multilayer coating method.

8. The ink-jet recording sheet of claim 7, wherein the inorganic microparticles contained in the first porous ink receptive layer are silica or alumina.

9. The ink-jet recording sheet of claim 8, wherein the first porous ink receptive layer and the second porous ink receptive layer each has a void volume of per unit area of 15 - 40 ml/m^2.

10. The ink-jet recording sheet of claim 9, wherein the support is a non-absorptive support.

11. A method for producing an ink-jet recording sheet comprising the steps of:

(a) coating simultaneously a first composition and a second composition on a support so as to obtain a first porous ink receptive layer and a second porous ink receptive layer, the first composition and the second composition each containing,

(i) inorganic microparticles; and

(ii) a hydrophilic binder;

(b) irradiating the porous ink receptive layers with ionization radiation so as to cross-link the hydrophilic binder; and

(c) drying the porous ink receptive layers,

wherein an average particle diameter of second particles of the inorganic microparticles in the second porous ink receptive layer is smaller than an average particle diameter of second particles of the inorganic microparticles in the first porous ink receptive layer.

12. The method for producing an ink-jet recording sheet of claim 11, wherein a polymerization degree of the hydrophilic binder is not smaller than 500 and a ratio of cross-linking conversion of the hydrophilic binder is not more than 4 mol% based on the total mol of the hydrophilic binder.

13. The method for producing an ink-jet recording sheet of claim 11, wherein the irradiating step (b) is carried out when a density of a solid portion in the porous ink receptive layers is in a range of 5 to 90 weight% based on the total weight of the porous ink receptive layers.

14. The method for producing an ink-jet recording sheet of claim 11, wherein the inorganic microparticles contained in the second porous ink receptive layer are silica or alumina.

15. The method for producing an ink-jet recording sheet of claim 11, wherein the first porous ink receptive layer and the second porous ink receptive layer each has a void volume of per unit area of 15 - 40 ml/m^2.

16. The method for producing an ink-jet recording sheet of claim 11, wherein the support is a non-absorptive support.

17. A method for producing an ink-jet recording sheet comprising the steps of:

(a) coating simultaneously a first composition and a second composition on a support so as to obtain a first porous ink receptive layer and a second porous ink receptive layer, the first composition and the second composition each containing,

(i) inorganic microparticles; and

(ii) a hydrophilic binder;

(b) irradiating the porous ink receptive layers with ionization radiation so as to cross link the hydrophilic binder; and

(c) drying the porous ink receptive layers,

wherein an average particle diameter of second particles of the inorganic microparticles in the second porous ink receptive layer is smaller than an average particle diameter of second particles of the inorganic microparticles in the first porous ink receptive layer; and a polymerization degree of the hydrophilic binder is not smaller than 500 and a ratio of cross-linking conversion of the hydrophilic binder is not more than 4 mol% based on the total mol of the hydrophilic binder,

wherein the irradiating step (b) is carried out when a density of a solid portion in the porous ink receptive layers is in a range of 5 to 90 weight% based on the total weight of the porous ink receptive layers.

18. The method for producing an ink-jet recording sheet of claim 17, wherein the inorganic microparticles contained in the second porous ink receptive layer are silica or alumina.

19. The method for producing an ink-jet recording sheet of claim 18, wherein the first porous ink receptive layer and the second porous ink receptive layer each has a void volume per unit area of 15 - 40 ml/m^2.

20. The method for producing an ink-jet recording sheet of claim 19, wherein the support is a non-absorptive support.